

Notice of Allowability

Application No.

10/612,041

Examiner

Evan Pert

Applicant(s)

KU ET AL.

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the remarks filed 3-30-05.
2. ☒ The allowed claim(s) is/are 1-69.
3. ☒ The drawings filed on 30 July 2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse is acknowledged, the traversal being drawn to an earlier examiner's improper identification of groupings of so-called "species" that are not actually mutually exclusive. The restriction is withdrawn, the examiner agreeing with applicant that claims 1 and 43 are generic, and that the restriction improperly identified groupings that are not mutually exclusive (see election 7-30-04).

Allowable Subject Matter

2. The following is an examiner's statement of reasons for allowance:

The examiner is aware that the art of semiconductor device manufacturing includes a history of inventions that comprise silicon source gas, nitrogen source gas, and/or oxygen source gas, supplied to a reaction chamber for depositing silicon nitride, oxide, oxynitride, and/or combinations thereof.

Yet, regarding claims 1-42 and 58-69, applicant's claimed invention embodied as a method can be distinguished from prior art in the way in which a "nitrogen atmosphere," a "silicon source gas," and an "oxygen source gas" in the method "deposit" a "silicon oxide" (i.e. not oxynitride) on a "substrate" in a "reaction chamber."

While particularly applicable to forming dual spacers on a gate line of a semiconductor device, the invention is only limited by the literal scope of the allowed claims (enforceable only if there is proper written description under 35 USC 112, 1st paragraph).

Regarding claims 43-57, the “maintaining a nitrogen atmosphere” and “supplying a nitrogen source gas and an oxygen source gas” to “form a silicon oxide layer on a substrate” are a way to distinguish applicant's invention from prior art.

The methodology is particularly beneficial as an efficient way to form dual spacers on a gate line of a semiconductor device (e.g. Fig. 6).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,077,791 discloses supplying a “nitrogen source gas,” a “silicon source gas,” and an “oxygen source gas” in a CVD reaction chamber to deposit successive layers of oxide 22 and nitride 24 [col. 2, lines 35-60], but are silent about the kind of “nitrogen atmosphere” claimed as part of applicant's allowed method.


4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evan Pert whose telephone number is 571-272-1969.

The examiner can normally be reached on M-F (7:30AM-3:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ETP
August 6, 2005


EVAN PERT
PRIMARY EXAMINER